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FOR INDUCTIVE TEACHING, DRILLING AND TESTING

BOOK NUMBER ONE

Numbers from 1 to 20

PREPARED UNDER THE DIRECTION OF
JOHN T. PRINCE

BOSTON, U.S.A.
GINN & COMPANY, PUBLISHERS
1895

Educ T 118.95.700 (I)

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The Athenæum Press
GINN & COMPANY, BOSTON, U.S.A.

NOTE TO TEACHERS.

THIS book is intended for the use of pupils of the first or second school year and is designed to accompany and follow teaching by objects. The illustrations are intended to give a graphic and orderly representation of what has been taught and to serve as models for the pupils in the solution of problems. They also indicate the kind of drawings which pupils may make at their seats upon slate or paper.

While the book is designed to embrace a year's work, some pupils and classes may be able to do in less time all that is needed to be done in the development and applications of numbers to twenty. It is believed that the number and variety of problems are so great as to avoid the necessity of giving many exercises for drill on the black board. Teachers may find it well to select exercises that their pupils most need.

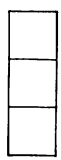
The exercises are numbered without reference to what may be needed for a lesson. They are given as a guide in assigning lessons and in hearing recitations.

For methods of teaching and of using this book, see Teachers' Manual which is designed to accompany all books of the series.

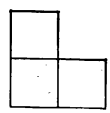
SECTION I.

NUMBERS FROM 1 TO 10.

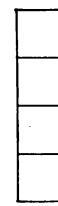
EXERCISE 1.



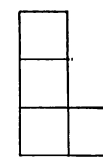
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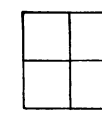
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$1+2=$
$3-1=$
$3-2=$
$3\div 2=$



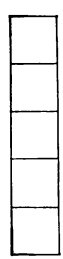
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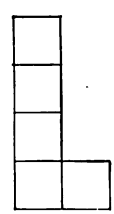
$3+1=$
$1+3=$
$4-1=$
$4-3=$
$4\div 3=$



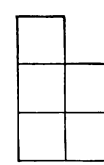
$2+2=$
$2\times 2=$
$4-2=$
$4\div 2=$



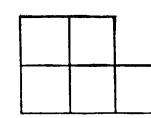
5



$4+1=$
$1+4=$
$5-4=$
$5\div 4=$



$3+2=$
$2+3=$
$5-3=$
$5\div 3=$



$2+2+1=$
$2\times 2+1=$
$5-2-2=$
$5\div 2=$

Copy and complete:

3 squares and 1 square are — squares.

4 squares less 3 squares are — square.

3 squares are — more than 1 square.

2 squares and — squares are 4 squares.

2 times 2 squares are — squares.

$\frac{1}{2}$ of 4 squares is — squares.

2 squares in 4 squares — times.

4 squares and 1 square are — squares

3 squares and — squares are 5 squares.

5 squares less 2 squares are — squares.

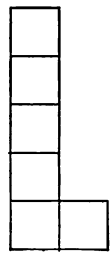
$1+4=?$	$5-1=?$	$2+3=?$
$5-?=4$	$5-?=1$	$5-2=?$
$3+?=5$	$5\div 4=?$	$5\div 2=?$

EXERCISE 8.

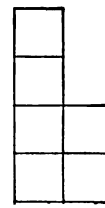


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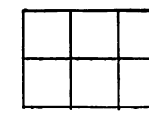
$5+1=$
$1+5=$
$6-1=$
$6-5=$
$6\div5=$



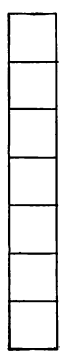
$4+2=$
$2+4=$
$6-2=$
$6-4=$
$6\div4=$



$3+3=$
$3\times2=$
$6-3=$
$6\div3=$

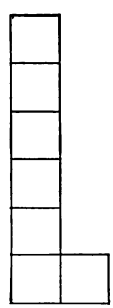


$2+2+2=$
$2\times3=$
$6-2-2-2=$
$6\div2=$

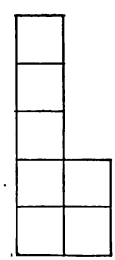


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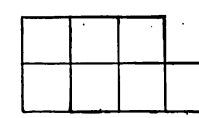
$6+1=$
$1+6=$
$7-1=$
$7-6=$
$7\div6=$



$5+2=$
$2+5=$
$7-2=$
$7-5=$
$7\div5=$



$4+3=$
$3+4=$
$7-3=$
$7-4=$
$7\div4=$



$2+2+2+1=$
$2\times3+1=$
$7-2-2-2=$
$7\div2=$

Copy and complete:

6 squares less 2 squares are — squares.

3 squares and 3 squares are — squares.

2 times 3 squares are — squares.

$\frac{1}{2}$ of 6 squares is — squares.

3 squares in 6 squares — times.

2 squares and 2 squares and 2 squares are — squares. $2 \times 3 = ?$

2 squares and 5 squares are — squares.

7 squares less 5 squares are — squares.

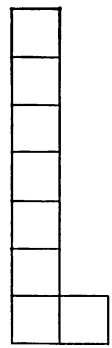
4 squares in 7 squares — times and — left over. $7 \div 4 = ?$

$3 \times ? = 6$ $3 + 4 = ?$ $7 \div 3 = ?$

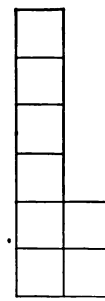
$6 \div 2 = ?$ $7 - 3 = ?$ $7 \div 2 = ?$



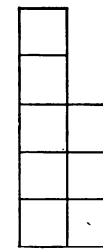
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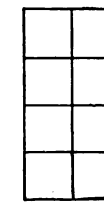
$7+1=$
$1+7=$
$8-1=$
$8-7=$
$8\div 7=$



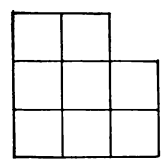
$6+2=$
$2+6=$
$8-2=$
$8-6=$
$8\div 6=$



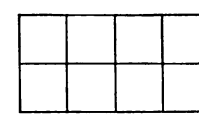
$5+3=$
$3+5=$
$8-3=$
$8-5=$
$8\div 5=$



$4+4=$
$4\times 2=$
$8-4=$
$8\div 4=$
$\frac{1}{4}$ of $8=$



$3+3+2=$
$3\times 2+2=$
$8-3-3=$
$8\div 3=$



$2+2+2+2=$
$2\times 4=$
$8-2-2-2-2=$
$8\div 2=$
$\frac{1}{2}$ of $8=$

5 squares and 3 squares are — squares.

Copy and complete:

8 squares are — more than 7 squares.

8 squares are — more than 4 squares.

8 squares are — more than 2 squares.

4 squares and — squares are 8 squares.

6 squares and — squares are 8 squares.

8 squares less 2 squares are — squares.

8 squares less — squares are 5 squares.

$\frac{1}{2}$ of 8 squares is — squares.

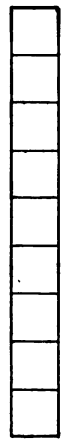
$\frac{1}{4}$ of 8 squares is — squares.

4 times 2 squares are — squares.

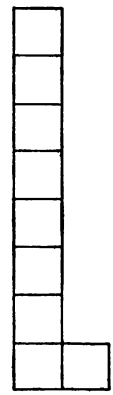
2 squares in 8 squares — times.

3 squares in 8 squares — times and — left over. $8 \div 3 = ?$

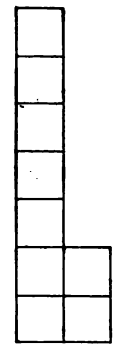
EXERCISE 7.



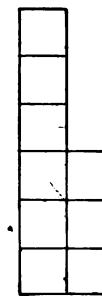
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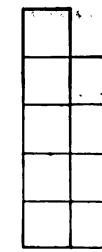
$8+1=$
$1+8=$
$9-1=$
$9-8=$
$9\div 8=$



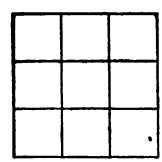
$7+2=$
$2+7=$
$9-2=$
$9-7=$
$9\div 7=$



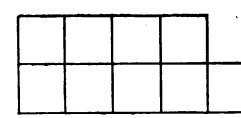
$6+3=$
$3+6=$
$9-3=$
$9-6=$
$9\div 6=$



$5+4=$
$4+5=$
$9-4=$
$9-5=$
$9\div 5=$
$9-4-4=$
$9\div 4=$



$3+3+3=$
$3\times 3=$
$9-3-3-3=$
$9\div 3=$



$2+2+2+2+1=$
$2\times 4+1=$
$9-2-2-2-2=$
$9\div 2=$

Copy and complete:

7 squares and — squares are 9 squares.

9 squares less 2 squares are — squares.

9 squares are — more than 5 squares.

3 squares are — less than 9 squares.

9 squares less 6 squares are — squares.

9 squares less 4 squares are — squares.

3 times 3 squares are — squares.

3 squares in 9 squares — times.

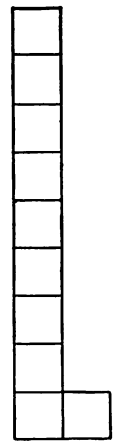
2 squares in 9 squares — times and — left over. $9 \div 2 = ?$

5 squares in 9 squares — times and — left over. $9 \div 5 = ?$

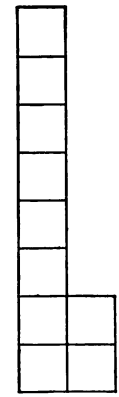
4 squares in 9 squares — times and — left over. $9 \div 4 = ?$



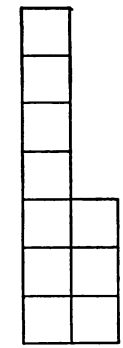
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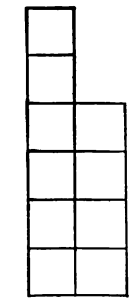
9+1=
10−1=
10−9=
10÷9=



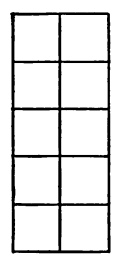
8+2=
10−2=
10−8=
10÷8=



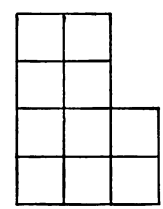
7+3=
10−3=
10−7=
10÷7=



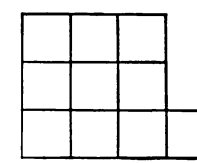
6+4=
10−4=
10−6=
10÷6=



5+5=
5×2=
10−5=
10÷5=



4+4+2=
4×2+2=
10−4−4=
10÷4=



3+3+3+1=
3×3+1=
10−3−3−3=
10÷3=

Copy and complete:

7 squares and — squares are 10 squares.

6 squares and — squares are 10 squares.

8 squares and — squares are 10 squares.

10 squares less 3 squares are — squares.

10 squares less 6 squares are — squares.

10 squares less 8 squares are — squares.

5 times 2 squares are — squares.

$\frac{1}{2}$ *of 10 squares is — squares.*

$\frac{1}{5}$ *of 10 squares is — squares.*

2 squares in 10 squares — times.

5 squares in 10 squares — times.

3 squares in 10 squares — times and — left over. $10 \div 3 = ?$

EXERCISE 11.

a.	*b.*	*c.*	*d.*
3+1=	9−1=	8+1=	3+2=
6+1=	4−1=	6−1=	5+2=
5+1=	7−1=	5+1=	6+2=
7+1=	6−1=	7+1=	7+2=

e.	*f.*	*g.*	*h.*
9−2=	6+2=	2+3=	7−3=
6−2=	7+2=	6+3=	8−3=
4−2=	5−2=	4+3=	5−3=
7−2=	8−2=	7+3=	10−3=

i.	*j.*	*k.*	*l.*
4+3=	2+4=	10−4=	6+4=
9−3=	5+4=	7−4=	8−4=
8−3=	6+4=	9−4=	4+4=
6+3=	3+4=	4−4=	8−4=

a.	*b.*	*c.*	*d.*
$4+5=$	$10-5=$	$3+5=$	$2+6=$
$3+5=$	$7-5=$	$9-5=$	$4+6=$
$1+5=$	$8-5=$	$10-5=$	$3+6=$
$2+5=$	$6-5=$	$2+5=$	$1+6=$
$5+5=$	$9-5=$	$4+5=$	$7-6=$

e.	*f.*	*g.*	*h.*
$8-6=$	$3+6=$	$2+7=$	$2+8=$
$6-6=$	$2+6=$	$3+7=$	$10-8=$
$7-6=$	$4+6=$	$10-7=$	$9-8=$
$10-6=$	$9-6=$	$8-7=$	$1+9=$

i. $8=7+1,$ $5+3,$? , ? , *etc.*

j. $9=8+1,$? , ? , ? , *etc.*

k. $10=$? , ? , ? , ? , *etc.*

EXERCISE 13.

a.	*b.*	*c.*	*d.*
$4+3=$	$7+2=$	$1+8=$	$5+5=$
$2+6=$	$3+5=$	$2+5=$	$2+2=$
$4+3=$	$4+6=$	$4+2=$	$3+3=$
$6+2=$	$5+3=$	$5+2=$	$4+4=$

e.	*f.*	*g.*	*h.*
$2+1=$	$2+3=$	$8+2=$	$4+3=$
$3+2=$	$1+6=$	$3+4=$	$3+2=$
$9+1=$	$2+4=$	$2+5=$	$6+2=$
$5+1=$	$1+4=$	$3+3=$	$4+5=$

i.	*j.*	*k.*	*l.*
$3+5=$	$1+9=$	$4+6=$	$2+7=$
$5+5=$	$8+1=$	$3+7=$	$2+8=$
$7+2=$	$7+3=$	$2+4=$	$4+5=$
$6+1=$	$6+4=$	$4+3=$	$5+4=$

a.	*b.*	*c.*	*d.*
$8-4=$	$6-4=$	$4-2=$	$7-2=$
$5-3=$	$8-1=$	$7-3=$	$9-6=$
$6-2=$	$5-2=$	$8-5=$	$8-7=$
$7-4=$	$7-1=$	$9-3=$	$7-5=$

e.	*f.*	*g.*	*h.*
$7-6=$	$7-2=$	$5-5=$	$8-6=$
$8-7=$	$8-3=$	$4-3=$	$10-4=$
$6-5=$	$9-4=$	$10-2=$	$7-6=$
$10-3=$	$8-2=$	$9-5=$	$9-7=$

i.	*j.*	*k.*	*l.*
$9-9=$	$7-6=$	$7-5=$	$4-3=$
$10-7=$	$8-4=$	$10-8=$	$8-6=$
$9-3=$	$9-5=$	$8-7=$	$9-2=$
$8-4=$	$8-3=$	$10-6=$	$8-5=$

Copy and add:

a.	2	2	2	2	2	2
	4	3	6	5	8	7
b.	3	3	3	3	3	3
	1	4	2	5	7	6
c.	4	4	4	4	4	4
	1	2	4	3	6	5
d.	5	5	5	5	5	6
	1	5	4	3	2	1

Copy and find the difference:

e.	8	9	10	7	8	9
	4	3	6	5	2	5
f.	10	9	8	10	9	7
	2	7	1	2	4	1

a. *4 books and — books are 7 books.*

b. *6 cents and — cents are 9 cents.*

c. *5 slates and — slates are 8 slates.*

d. *2 flowers and — flowers are 6 flowers.*

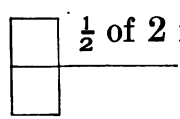
e. *2 girls and — girls are 8 girls.*

f. *8 ducks less — ducks are 4 ducks.*

g. *7 bags less — bags are 5 bags.*

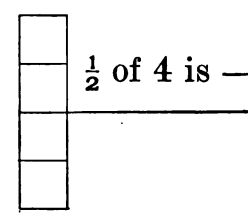
h. *7 rats less — rats are four rats.*

i. *8 boxes less — boxes are 3 boxes.*



$\frac{1}{2}$ of 2 is —

Two.



$\frac{1}{2}$ of 4 is —

Four.

By squares show:

$\frac{1}{2}$ of 6 =	$\frac{1}{2}$ of 8 =	$\frac{1}{2}$ of 10 =
$\frac{1}{3}$ of 6 =	$\frac{1}{4}$ of 8 =	$\frac{1}{5}$ of 10 =

Copy and complete:

2 dolls and 3 dolls are — dolls.

4 girls and 3 girls are — girls.

5 rabbits and 2 rabbits are — rabbits.

6 marbles and 2 marbles are — marbles

2 eggs and 4 eggs are — eggs.

3 apples and 3 apples are — apples.

5 kittens less 2 kittens are — kittens.

6 balls less 3 balls are — balls.

5 nuts less 3 nuts are — nuts.

6 wagons less 2 wagons are — wagons.

7 books less 3 books are — books.

4 tops less 2 tops are — tops.

6 dogs less 4 dogs are — dogs.

Mary had four cents, and her mother gave her five more. Then she had — cents.

If I have eight apples, and give away three of them, I shall have — left.

A man had six horses, and sold one third of them. He had — horses left.

Tell stories, with these numbers, about:

hens	cats	dogs	birds
3+4	6+2	4+2	5+1
frogs	cows	robins	eggs
3+7	6+4	1+3	2+6
boys	girls	rabbits	horses
9+1	7+2	4−3	7−5
nests	books	pens	ducks
6−4	7−3	5−2	8−4
foxes	hats	nuts	trees
6−1	5−4	6−5	8−3
rats	flowers	boxes	slates
6+3	10−7	5+4	9−7
cups	chains	bags	dolls
8+2	$\frac{1}{2}$ of 4	$\frac{1}{4}$ of 8	$\frac{1}{3}$ of 9



$3 \times 2 =$



$2 \times 3 + 1 =$



$6 \div 3 =$

? threes $= 6$

Copy and show by lines:

a.	*b.*	*c.*
$2 \times 2 =$	$3 \times 3 =$	$10 = 3 \times 3 +$?
$2 \times 3 =$	$4 \times 2 =$	$10 = 4 \times 2 +$?
$2 \times 4 =$	$5 \times 1 =$	$10 = 6 \times 1 +$?
$2 \times 5 =$	$5 \times 2 =$	$10 = 8 \times 1 +$?

d.

In five there are — 2's and — left over.

In seven there are — 3's and — left over.

In eight there are — 3's and — left over.

In nine there are — 2's and — left over.

a.	*b.*	*c.*
$3 \times 2 =$	$3 \times 2 + 2 =$	$10 \div 2 =$
$4 \times 2 =$	$4 \times 2 + 2 =$	$8 \div 2 =$
$3 \times 3 =$	$3 \times 3 + 1 =$	$6 \div 2 =$

d.	*e.*	*f.*	*g.*
$\frac{1}{3}$ of $6 =$	$9 \div 3 =$	$3 \times 3 =$	$8 - 4 =$
$\frac{1}{2}$ of $8 =$	$8 \div 2 =$	$6 \div 3 =$	$10 - 5 =$
$\frac{1}{2}$ of $10 =$	$10 \div 2 =$	$4 \times 2 =$	$9 - 7 =$
$\frac{1}{3}$ of $9 =$	$8 \div 4 =$	$2 \times 5 =$	$10 - 4 =$

h.

In nine there are — 4's and — left over.

In ten there are — 3's and — left over.

In nine there are — 2's and — left over.

In seven there are — 2's and — left over.

In ten there are — 4's and — left over.

a.	*b.*	*c.*	*d.*
6 + 1 =	4 + 3 =	5 + 4 =	8 − 2 =
3 + 4 =	8 − 5 =	6 − 4 =	6 − 5 =
7 + 2 =	2 + 7 =	2's in 6 =	7 − 1 =
8 − 3 =	8 ÷ 4 =	6 ÷ 2 =	10 − 4 =

e.	*f.*	*g.*	*h.*
7 − 4 =	3 + 6 =	10 ÷ 5 =	7 + 3 =
8 ÷ 2 =	2 × 5 =	7 + 1 =	10 ÷ 2 =
2's in 8 =	2's in 8 =	1 + 7 =	8 − 3 =
6 × 1 =	5 − 4 =	4 + 6 =	4 × 2 =

i. In 4 there are — twos.

j. In 5 there are — twos and — remainder.

k. In the same way tell how many 2's in 6; 5; 7; 9; 10.

l. How many 3's in 4? in 6? in 8? in 9? in 10?

m. How many 4's in 5? in 8? in 6? in 9? in 10?

Add at sight:

4	5	7	6	9	3	4	7
1	1	1	1	1	2	2	2
6	5	8	7	2	3	5	4
2	2	2	2	3	3	3	3
2	1	3	5	4	6	1	3
4	4	4	4	4	4	5	5

Add at sight:

4	6	3	9	7	2	4	5
3	4	5	1	3	6	5	2
3	8	2	9	7	4	5	6
4	2	5	0	1	6	2	3
5	7	3	8	6	5	6	5
3	2	6	2	3	5	4	4
9	2	7	4	3	6	8	5
1	7	3	6	5	2	1	2

Subtract at sight:

5	5	6	7	9	8	10	9
1	3	2	4	3	2	4	3
6	8	9	10	6	7	8	9
5	6	4	6	3	5	4	5
9	7	8	6	7	9	8	10
3	5	6	4	5	7	6	8
10	8	10	9	10	8	10	10
6	2	9	3	7	2	1	3

a. Eight apples and two apples are — apples.

b. Seven men and three men are — men.

c. Nine cents less four cents are — cents.

d. Ten dollars less seven dollars are — dollars.

e. Four girls and six girls are — girls.

f. Nine pounds of tea less seven pounds are — pounds.

g. Five times two cents are — cents.

h. Three times three quarts of milk are — quarts.

i. One fourth of eight apples is —apples.

j. One third of six books is — books.

k. Nine boys are — more than two boys.

l. Ten cents are — more than one cent.

m. Four oranges are — times two oranges.

n. Six trees are — times two trees.

o. Eight books are — times four books.

p. Three apples will cost — times as much as one apple.

q. Four apples will cost — times as much as two apples.

r. Ten apples will cost — times as much as five apples.

s. There are — times three cents in six cents.

t. There are — times two cents in eight cents.

u. There are — times four cents in eight cents.

a. John had two cents, and his mother gave him five more. He then had two cents and five cents. Two cents and five cents are — cents.

b. William had eight cents, and spent four cents. He then had eight cents less four cents. Eight cents less four cents are — cents.

c. Mary bought an orange for two cents, an apple for one cent, and a book for four cents. She spent two cents and one cent and four cents. Two cents and one cent and four cents are — cents.

d. John is ten years old. His little sister is three years old. John is — years older than his sister.

e. There are four trees on one side of the yard, and six trees on the other side. In the whole yard there are four trees and six trees. Four trees and six trees are — trees.

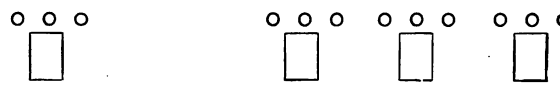
f. I had ten little chickens, and two of them died. There were left — chickens.

g. If a coat costs nine dollars and a pair of shoes costs two dollars, the coat costs — more dollars than the shoes.

h. Harry had nine apples, and gave away one third of them. He gave away — apples, and had — apples left.



a. If one pencil costs two cents, two pencils will cost two times two cents. Two times two cents are — cents.



b. If one blank-book costs three cents, three blank-books will cost three times three cents. Three times three cents are — cents.

c. I buy at the store four apples. One apple costs two cents; four apples cost four times two cents. Four times two cents are — cents.

d. Eight sticks of candy at one cent a stick will cost — cents.

e. Three sticks of candy at two cents a stick will cost — cents.

f. Two pencils at three cents apiece will cost — cents.

g. A cow has four legs; two cows have two times four legs. Two times four legs are — legs.

h. A dog has two ears; four dogs have four times two cars. Four times two ears are — ears.

a. A spider has four pairs of legs. Four pairs of legs are four times two legs, or — legs.

b. A grasshopper has three pairs of legs. Three pairs of legs are — legs.

c. A spider has — legs. A grasshopper has — legs. A spider has — more legs than a grasshopper.

d. A bee has four wings. Two bees have — wings.

e. Three spools of thread cost nine cents. One spool will cost one third of nine cents. One third of nine cents is — cents.

f. If Mary has four dolls, and gives two of them away, what part of them does she give away?

g. Harry has three doves, and George has twice as many. How many has George?

h. What number is one half of ten? one half of eight? one half of six?

i. Alice bought an orange for three cents, and some nuts for two cents, and gave the storekeeper ten cents. How much did she receive back?

j. A bee has six legs and four wings. It has — pairs of legs and — pairs of wings. A spider has — more legs than a bee.

Add:

6	3	3	2	3	3	5	2
2	2	1	5	4	6	0	2
1	4	3	1	2	0	4	2
4	3	2	3	2	2	5	4
2	1	7	0	5	8	1	2
1	4	0	3	3	0	3	3
1	5	2	3	5	6	4	3
2	4	2	3	1	3	4	1
3	1	4	3	2	0	2	6
2	4	3	3	1	2	5	3
2	3	4	4	4	7	2	2
3	2	3	2	5	1	2	5

EXERCISE 28.

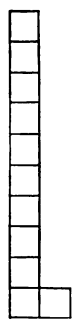
Tell a story about each of the following examples:

a. $4+3=$
b. $10-6=$
c. $5+5=$
d. $8+2=$
e. $9-4=$
f. $3+2+4=$
g. $2 \times 4=$
h. $3 \times 3=$
i. $5 \times 2=$
j. $\frac{1}{2}$ of $8=$
k. $\frac{1}{3}$ of $6=$
l. $\frac{1}{4}$ of $8=$

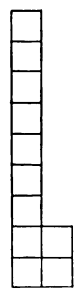
SECTION II.

NUMBERS FROM 1 TO 13.

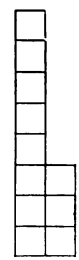
EXERCISE 1.



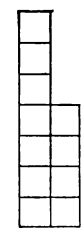
10+ 1=
1+10=
11−10=
11÷10=



9+2=
2+9=
11−9=
11÷9=



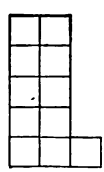
8+3=
3+8=
11−8=
11÷8=



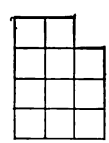
7+4=
4+7=
11−7=
11÷7=



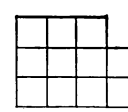
6+5=
5+6=
11−6=
11÷6=



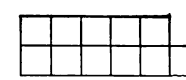
5+5+1=
5×2+1=
11−5−5=
11÷5=



4+4+3=
4×2+3=
11−4−4=
11÷4=



3+3+3+2=
3×3+2=
11−3−3−3=
11÷3=



2+2+2+2+2+1=
2×5+1=
11−2−2−2−2−2=
11÷2=

8 squares and 3 squares are — squares.
7 squares and — squares are 11 squares.

10 and — are	11	5 and — are	11
9 and — are		4 and — are	
8 and — are		3 and — are	
7 and — are		2 and — are	
6 and — are		1 and — are	
7 and — are	11	9 and — are	11
4 and — are		2 and — are	
8 and — are		6 and — are	
3 and — are		5 and — are	
8 and — are	11	9 and — are	11
6 and — are		3 and — are	
10 and — are		1 and — are	
7 and — are		4 and — are	
5 and — are		2 and — are	
10 and — are	11	1 and — are	11
6 and — are		5 and — are	
4 and — are		7 and — are	
9 and — are		2 and — are	
3 and — are		8 and — are	

— fives and — are	11	
— fours and — are		
— threes and — are		
— twos and — are		

a.	*b.*	*c.*	*d.*
4+3=	6+3=	10−1=	11−2=
8+2=	4+4=	11−1=	9−3=
7+3−	7+4=	9−2=	11−3=
9+2=	8+3=	8−3=	10−4=
5+3=	6+4=	10−2=	11−4=

e.	*f.*	*g.*	*h.*
5+5=	8+3=	1+6=	11−6=
7+4=	6+3=	3+6=	2+7=
6+5=	8−5=	5+6=	4+7=
10−5=	4+5=	8−6=	9−7=
9−5=	11−5=	10−6=	11−7=

i.	*j.*	*k.*
2+8=	4×2+?=11	2 fours and 3 =11
3+7=	3×3+?=11	3 threes and —=11
3+8=	5×2+?=11	— twos and —=11
10−8=	6×1+?=11	— fives and —=11
11−8=	2×5+?=11	— ones and —=11

l.	*m.*	*n.*
2+9=	7×1+?=11	— eight and —=11
11−9=	9×1+?=11	— six and —=11
11−7=	8×1+?=11	— nine and —=11
11−6=	10×1+?=11	— seven and —=11
11−4=	1×11+?=11	— ten and —=11

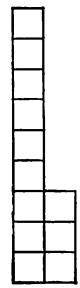
a.	*b.*	*c.*	*d.*
$4\times2+1=$	$7\times1+3=$	$11\div4=$	$11\div7=$
$3\times3+2=$	$9\times1+2=$	$11\div3=$	$11\div9=$
$5\times2+1=$	$10\times1+1=$	$11\div5=$	$11\div10=$
$8\times1+3=$	$2\times5+1=$	$11\div8=$	$11\div1=$
$6\times1+4=$	$4\times2+2=$	$11\div6=$	$11\div2=$

e.	*f.*	*g.*	*h.*
$4+6=$	$11-4=$	$\frac{1}{2}$ of $4=$	$\frac{1}{9}$ of $9=$
$5+3=$	$6+3=$	$\frac{1}{2}$ of $8=$	$\frac{1}{2}$ of $6=$
$7+2=$	$9\div4=$	$\frac{1}{2}$ of $10=$	$\frac{1}{4}$ of $4=$
$10-8=$	$7\div5=$	$\frac{1}{3}$ of $9=$	$\frac{1}{3}$ of $6=$
$10-6=$	$11-8=$	$\frac{1}{4}$ of $8=$	$\frac{1}{8}$ of $8=$
$10\div6\div$	$11\div8=$	$\frac{1}{5}$ of $10=$	$\frac{1}{10}$ of $10=$

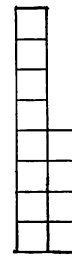
i.	*j.*
2 threes and — are 8	5 twos + 1 = 11
3 threes and — are 11	— threes + — = 11
4 twos and — are 9	— fours + — = 11
2 fours and — are 10	— fives + — = 11
5 twos and — are 11	— six + — = 11
1 six and — are 11	— seven + — = 11
— fives and — are —	— eight + — = 11
— nine and — are —	— nine + — = 11
— twos and — are 7	— ten + — = 11
— eight and — are —	— eleven + — = 11



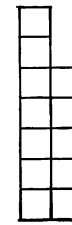
10+ 2=
2+10=
12−10=
12÷10=



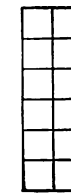
9+3=
3+9=
12−9=
12÷9=



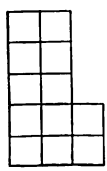
8+4=
4+8=
12−8=
12÷8=



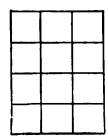
7+5=
5+7=
12−7=
12÷7=



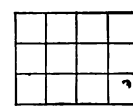
6+6=
6×2=
12−6−6=
12÷6=



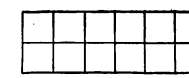
5+5+2=
5×2+2=
12−5−5=
12÷5=



4+4+4=
4×3=
12−4−4−4=
12÷4=



3+3+3+3=
3×4=
12−3−3−3−3=
12÷3=



2+2+2+2+2+2=
2×6=
12−2−2−2−2−2−2=
12÷2=

12 = 10 + ?	? 2's in 12?	$\frac{1}{2}$ of 12 =
12 = 8 + ?	? 6's in 12?	$\frac{1}{4}$ of 12 =
12 = 5 + ?	? 4's in 12?	$\frac{1}{3}$ of 12 =
12 = 7 + ?	? 3's in 12?	$\frac{1}{6}$ of 12 =
12 = 4 + ?	? 7's in 12?	$\frac{1}{8}$ of 12 =
12 = 2 + ?	? 8's in 12?	$\frac{1}{10}$ of 12 =
12 = 3 + ?	? 9's in 12?	$\frac{1}{12}$ of 12 =

a.

$11 + __ = 12$
$10 + __ = 12$
$9 + __ = 12$
$8 + __ = 12$
$7 + __ = 12$

b.

$6 + __ = 12$
$5 + __ = 12$
$4 + __ = 12$
$3 + __ = 12$
$2 + __ = 12$

c.

$7 + __ = 12$
$8 + __ = 12$
$9 + __ = 12$
$10 + __ = 12$
$11 + __ = 12$

d.

$8 + __ = 12$
$4 + __ = 12$
$9 + __ = 12$
$3 + __ = 12$
$6 + __ = 12$

e.

$11 + __ = 12$
$1 + __ = 12$
$7 + __ = 12$
$5 + __ = 12$
$2 + __ = 12$

f.

$8 + __ = 12$
$5 + __ = 12$
$3 + __ = 12$
$2 + __ = 12$
$7 + __ = 12$

g.

$12 - 1 =$
$12 - 2 =$
$12 - 3 =$
$12 - 4 =$
$12 - 5 =$

h.

$12 - 6 =$
$12 - 7 =$
$12 - 8 =$
$12 - 9 =$
$12 - 10 =$

i.

$12 - 9 =$
$12 - 6 =$
$12 - 3 =$
$12 - 1 =$
$12 - 7 =$

j.

$12 - 5 =$
$12 - 2 =$
$12 - 4 =$
$12 - 8 =$
$12 - 10 =$

k.

$7 + ? = 12$
$12 - ? = 4$
$4 + ? = 12$
$12 - ? = 2$
$12 - ? = 9$

l.

$3 + ? = 12$
$12 - ? = 1$
$12 - ? = 8$
$6 + ? = 12$
$3 + ? = 12$

m.

$12 - ? = 4$
$5 + ? = 12$
$9 + ? = 12$
$12 - 6 = ?$
$12 - ? = 8$

a.	*b.*	*c.*	*d.*
$5+6=$	$6\times 2=$	5 twos $+1=$	$\frac{1}{3}$ of $6=$
$8+4=$	$2\times 6=$	3 twos $+1=$	$\frac{1}{4}$ of $8=$
$11-7=$	$3\times 3=$	2 threes $+2=$	$\frac{1}{3}$ of $9=$
$12-8=$	$2\times 5=$	2 fours $+3=$	$\frac{1}{3}$ of $12=$
$12-6=$	$3\times 4=$	3 threes $+2=$	$\frac{1}{4}$ of $12=$

e.	*f.*	*g.*	*h.*
$5+7=$	$2\times 4=$	4 threes $+0=$	$\frac{1}{4}$ of $12=$
$8+4=$	$5\times 1=$	2 fives $+2=$	$\frac{1}{5}$ of $5=$
$6+3=$	$3\times 2=$	3 threes $+2=$	$\frac{1}{5}$ of $10=$
$12-9=$	$4\times 2=$	1 eight $+4=$	$\frac{1}{7}$ of $7=$
$12-5=$	$10\times 1=$	3 fours $+0=$	$\frac{1}{11}$ of $11=$

EXERCISE 8.

a. How many twos in 7? 8? 9? 10? 12? 11?
b. How many threes in 7? 9? 8? 10? 12? 11?
c. How many fours in 7? 9? 8? 10? 12? 11?
d. How many fives in 7? 9? 8? 10? 12? 11?
e. How many sixes in 8? 7? 9? 10? 12? 11?
f. How many sevens in 8? 7? 9? 10? 12? 11?
g. $8=2\times 4=4\times 2=3\times 2+2=4+4=5+3=3+5$, etc.

In the same way:

h. $5=$ *j.* $7=$ *l.* $11=$
i. $6=$ *k.* $9=$ *m.* $12=$

Copy and add:

a.	*b.*	*c.*	*d.*	*e.*	*f.*	*g.*	*h.*	*i.*	*j.*
3	5	3	4	5	8	1	5	6	4
4	2	6	6	4	2	8	5	3	2
4	5	3	2	2	0	2	2	2	6

k.	*l.*	*m.*	*n.*	*o.*	*p.*	*q.*	*r.*	*s.*	*t.*
2	3	4	3	4	5	5	6	7	7
7	6	3	4	5	5	4	3	5	4
1	2	3	5	2	2	1	3	0	0

EXERCISE 10.

Write with proper signs:

a. From 12 take 3; 4; 7; 6; 8; 9; 10; 5; 11.

b. From 11 take 5; 4; 3; 7; 6; 10; 8; 9; 2.

c. How many are 4 twos and one? 2 fives and two? 3 threes and two? 6 twos and nothing? 2 fours and three? 2 sixes?

d. How many 2's in 5? 3's in 7? 4's in 9? 5's in 11? 6's in 12? 7's in 10? 8's in 11? 9's in 12? 10's in 12?

e. Subtract by twos from 12 to 0.

f. Subtract by threes from 12 to 0.

g. Subtract by fours from 12 to 0.

h. Subtract by fives from 12 to 2.

i. Subtract by sixes from 12 to 0.

a. Eight apples and three apples are — apples.

b. Nine * and three * are — *

c. Seven * and four * are — *

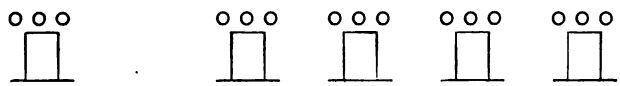
d. Two * and ten * are — *

e. Six * and five * are — *

f. Twelve * less six * are — *

g. Eleven * less nine * are — *

h. Five * and seven * are — *



i. If one hat costs three dollars, four hats will cost — dollars.

Show by pictures:

j. How much five pencils will cost at two cents apiece.

k. How much three books will cost at three cents apiece.

l. How much two little flags will cost at six cents apiece.

m. How much three rulers will cost at four cents apiece.

n. How many shoes in four pairs.

o. How many horns six cows have.

p. How many legs three horses have.

* Word to be supplied by pupil.

a. Four robins and seven sparrows are — *

b. Six pinks and five roses are — *

c. Nine boys and three girls are — *

d. Twelve bags of flour less nine bags of flour are — bags.

e. Ten pints of berries less six pints of berries are — pints.

f. Eight quarts of milk less five quarts of milk are — quarts.

g. Nine pounds of sugar less two pounds of sugar are — pounds.

h. Henry has twelve pencils, and Mary seven. Henry has — more pencils than Mary.

i. Joseph earned five cents on Monday and twice as many on Tuesday. On Tuesday he earned — cents.

j. A boy bought six marbles at one store, and twice as many at another. He bought — marbles at the second store.

k. Mary has ten dolls, and Ellen has six. Mary has — more dolls than Ellen.

l. A bee has four wings, and a fly has one-half as many wings as a bee. A fly has — wings.

m. A butterfly has as many wings as a bee. A butterfly, a bee, and a fly have — wings.

* Word to be supplied by pupils.



Twelve things = one dozen.

a. $\frac{1}{2}$ doz. = ? *b.* $\frac{1}{3}$ doz. = ? *c.* $\frac{1}{4}$ doz. = ?

d. How many separate squares can you make with a dozen sticks?

e. A boy gave a dozen apples equally to three friends. How many apples did each one have?

f. If 4 apples are put on each plate, how many plates will it take to hold a dozen?

g. Make a dozen marks. Cross half of them. How many marks are left not crossed?

h. Make a dozen marks. Cross $\frac{1}{4}$ of them. How many marks are left not crossed?

i. One dozen peaches less four peaches are — peaches.

j. One half dozen eggs and 2 eggs are — eggs.

k. A dozen children are playing ball. If 8 of them are boys, there are — girls.

l. $\frac{1}{2}$ doz. eggs at 2 cents apiece will cost — cents.

m. $\frac{1}{6}$ of a dozen oranges at 3 cents apiece will cost how much? $\frac{1}{6}$ of a dozen oranges is — oranges. If 1 orange costs 3 cents, — oranges will cost — times 3 cents. — times 3 cents are — cents.

Show the following by squares or blocks, as in Exercises 1 and 5:

a.	*b.*	*c.*	*d.*
$10+3=$	$9+4=$	$8+5=$	$7+6=$
$3+10=$	$4+9=$	$5+8=$	$6+7=$
$10\times1+3=$	$9\times1+4=$	$8\times1+5=$	$7\times1+6=$
$13-10=$	$13-9=$	$13-8=$	$13-7=$
$13\div10=$	$13\div9=$	$13\div8=$	$13\div7=$

e.	*f.*	*g.*
$6+6+1=$	$5+5+3=$	$4+4+4+1=$
$6\times2+1=$	$5\times2+3=$	$4\times3+1=$
$13-6-6=$	$13-5-5=$	$13-4-4-4=$
$13\div6=$	$13\div5=$	$13\div4=$

h.	*i.*
$3+3+3+3+1=$	$2+2+2+2+2+2+1=$
$3\times4=$	$2\times6+1=$
$13-3-3-3-3=$	$13-2-2-2-2-2-2=$
$13\div3=$	$13\div2=$

j.	*k.*	*l.*
$13=9+?$	? 5's in 13?	$13\div6=$
$13=6+?$	? 4's in 13?	$13\div10=$
$13=8+?$	? 3's in 13?	$13\div9=$
$13=7+?$	? 2's in 13?	$13\div7=$

a.

$1 + ? = 13$
$2 + ? = 13$
$3 + ? = 13$
$4 + ? = 13$
$5 + ? = 13$
$6 + ? = 13$

b.

$7 + ? = 13$
$8 + ? = 13$
$9 + ? = 13$
$10 + ? = 13$
$11 + ? = 13$
$12 + ? = 13$

c.

$3 + ? = 13$
$6 + ? = 13$
$9 + ? = 13$
$7 + ? = 13$
$4 + ? = 13$
$5 + ? = 13$

d.

$1 + ? = 12$
$12 - ? = 2$
$3 \times 3 = ?$
$? + 4 = 10$
$? \times 5 = 10$

e.

$12 \div 6 = ?$
$5 \times ? = 10$
$3 + 8 = ?$
$4 \times ? = 12$
$? - 9 = 3$

f.

$13 - 7 = ?$
$12 - ? = 10$
$4 + 8 = ?$
$? + 6 = 13$
$? - 2 = 11$

g.

5 twos and 1 = ?
3 fours and 1 = ?
2 fives and 3 = ?
2 fours and 3 = ?
5 twos and 2 = ?

h.

3 threes and 2 = ?
2 sixes and 1 = ?
6 twos and 1 = ?
4 threes and 1 = ?
1 seven and 4 = ?

i.

In 13 there are — twos and — over.
In 13 there are — threes and — over.
In 13 there are — fours and — over.
In 13 there are — fives and — over.
In 13 there are — sixes and — over.

a.

How many are
12 boys and 1 boy?
4 whips and 5 whips?
2 nuts and 10 nuts?
5 lemons and 6 lemons?

b.

How many are
4 chairs and 7 chairs?
8 lamps and 4 lamps?
2 balls and 6 balls?
9 birds and 2 birds?

c.

13 is — more than 11.
13 is — more than 10.
13 is — more than 9.
13 is — more than 8.
13 is — more than 7.

d.

13 is — more than 6.
13 is — more than 5.
13 is — more than 4.
13 is — more than 3.
13 is — more than 2.

e.

12 are how many 2's?
13 are how many 3's?
10 are how many 5's?
9 are how many 3's?
6 are how many 2's?

f.

11 are how many 5's?
12 are how many 6's?
13 are how many 2's?
4 are how many 3's?
10 are how many 2's?

g. How many must you put with 3 to make 13? with 5? with 7? with 10? with 8? with 6? with 9? with 12? with 2? with 4?

h. Add:

4	2	8	4	4	5	7	8	5	6
5	11	3	6	9	7	6	4	8	5

a. Count by 2's from 1 to 13 and back to 1.

b. Count by 3's from 1 to 13 and back to 1.

c. Count by 4's from 1 to 13 and back to 1.

d. James had 11 rabbits, but he sold 4 of them. How many rabbits had he left?

e. In a stable were five black cows and seven red cows. How many cows in all?

f. If a little boy found 8 eggs, and his sister found 3 more, how many did she find?

g. A little girl spent 2 cents for candy out of a dime. How many cents had she left?

h. There were four little nests, with 3 pretty birds in each nest. How many birds in all?

i.	*j.*	*k.*	*l.*
13− 3=	13− —= 3	12+ —=13	4+ 7=
13− 6=	13− —=10	2+ —=13	6+ 7=
13− 8=	13− —= 6	10+ —=13	5+ 6=
13−10=	13− —= 7	6+ —=13	3+ 4=
13− 4=	13− —= 8	7+ —=13	2+11=

m.	*n.*	*o.*
$\frac{1}{2}$ of 10 =	$\frac{1}{2}$ of 12 =	Add:
$\frac{1}{5}$ of 10 =	$\frac{1}{3}$ of 12 =	4 5 3 3 3 2
$\frac{1}{2}$ of 8 =	$\frac{1}{4}$ of 12 =	3 1 3 4 1 7
$\frac{1}{4}$ of 8 =	$\frac{1}{6}$ of 12 =	2 2 2 4 5 1



10 cents make 1 dime.
2 five-cent pieces make 1 dime.
5 cents is one half of a dime.

a. It takes — two-cent pieces to make a dime.

b. A little boy had 2 five-cent pieces and 3 cents more. He then had — cents.

c. Mary had 2 five-cent pieces, and Edith had 9 cents. Which had the more money?

d. A little girl had 5 cents and 2 cents in her purse. How much more would she need to make a dime?

e. Lottie bought a spool of thread for 6 cents and paid for it with a dime. How much money had she left?

f. How many cents in 1 dime and 2 cents?

g. A little boy had a dime in his pocket, and spent 8 cents. How much had he left?

h. A little girl paid half a dime and 1 cent for some thread. How many cents did she pay?

i. How many cents in 4 two-cent pieces and a five-cent piece?

SECTION III.

NUMBERS FROM 1 TO 15.

EXERCISE 1.

Show by drawings or objects the following:

a.	*b.*	*c.*	*d.*
$10+4=$	$9+5=$	$8+6=$	$7+7=$
$4+10=$	$5+9=$	$6+8=$	$7\times 2=$
$14-4=$	$14-5=$	$14-6=$	$\frac{1}{2}$ of $14=$
$14-10-$	$14-9=$	$14-8=$	$14-7=$
$14\div 10=$	$14\div 9=$	$14\div 8-$	$14\div 7=$

e.	*f.*	*g.*
$6+6+2=$	$5+5+4=$	$4+4+4+2=$
$6\times 2+2=$	$5\times 2+4=$	$4\times 3+2=$
$14-6-6=$	$14-5-5=$	$14-4-4-4=$
$14\div 6=$	$14\div 5=$	$14\div 4=$

h.	*i.*
$3+3+3+3+2=$	$2+2+2+2+2+2+2=$
$3\times 4+2=$	$2\times 7=$
$14-3-3-3-3=$	$14-2-2-2-2-2-2-2=$
$14\div 3=$	$14\div 2=$

j. $14=8+?\ =4+?\ =9+?\ =3+?\ =11+?$
$=7+?\ =2+?\ =5+?\ =10+?\ =6+?$

EXERCISE 2.

a. 14 = 12 + ? = 9 + ? = 7 + ? = 4 + ? = 2 + ?

b. 14 = 6 + ? = 3 + ? = 5 + ? = 8 + ? = 10 + ?

c. From 14 take 9; 7; 3; 8; 5; 2.

d. From 14 take 10; 13; 4; 11; 6; 12.

e.	*f.*	*g.*
$6 \times 2 + 2 =$	$4 \times 2 + 3 =$	$10 \times 1 + 4 =$
$8 \times 1 + 5 =$	$3 \times 4 + 2 =$	$12 \times 1 + 2 =$
$7 \times 2 + 0 =$	$6 \times 1 + 5 =$	$11 \times 1 + 2 =$

EXERCISE 3.

a. In 14 there are — sevens.

b. In 14 there are — twos.

c. In 14 there are — threes and — remainder.

d. In 14 there are — fives and — remainder.

e. In 14 there are — fours and — remainder.

f. In 14 there are — sixes and — remainder.

EXERCISE 4.

Add at sight:

4	3	2	3	1	4	5	6	2	4
2	4	5	4	5	3	3	7	7	8
2	4	4	5	6	6	5	1	5	2
6	5	3	4	2	3	6	9	8	6
3	4	7	6	8	9	4	2	1	5
4	5	3	4	4	2	4	3	5	3

a.	*b.*	*c.*	*d.*
14 − 5 =	10 − 6 =	12 − 4 =	13 − 3 =
13 − 5 =	12 − 6 =	14 − 4 =	7 − 3 =
11 − 5 =	14 − 6 =	9 − 4 =	10 − 3 =
10 − 5 =	11 − 6 =	10 − 4 =	8 − 3 =
8 − 5 =	9 − 6 =	8 − 4 =	14 − 3 =
12 − 5 =	13 − 6 =	11 − 4 =	9 − 3 =

e.	*f.*	*g.*	*h.*
7 + 7 =	6 + 8 =	14 ÷ 2 =	7 × ___ = 14
½ of 14 =	2 + 9 =	13 ÷ 3 =	6 × ___ = 12
14 − 7 =	5 + 6 =	10 ÷ 2 =	3 × ___ = 9
14 ÷ 7 =	4 + 7 =	11 ÷ 5 =	8 × ___ = 8
2 × 7 =	3 + 9 =	9 ÷ 3 =	5 × ___ = 10

i.	*j.*	*k.*
12 − 3 − 3 − 3 =	14 − 4 − 4 − 4 =	5 twos less 6 =
14 − 2 − 2 − 2 − 2 =	12 − 2 − 2 − 2 =	3 threes less 2 =
10 − 4 − 4 =	10 − 1 − 1 − 1 =	2 sevens less 4 =
11 − 2 − 2 − 2 =	13 − 4 − 4 =	4 threes less 5 =
13 − 3 − 3 − 3 =	14 − 3 − 3 − 3 =	4 twos less 7 =

l. Add at sight.

4	5	4	3	2	1	4	2	3	4
2	3	1	1	5	2	1	6	3	1
6	2	2	4	3	3	3	1	2	6
1	2	6	1	4	4	2	3	2	3

Put in the missing number:

a.	*b.*	*c.*	*d.*
4+6= ?	14− 6= ?	12÷ 3= ?	13−11= ?
3+ ?=10	2× ?=14	6× ?=12	? −12=2
5× ?=10	3× 3= ?	13− 8= ?	14÷ 2= ?
12−6= ?	2+12= ?	9÷ 3= ?	11+ 3= ?
?×4=12	?− 8= 6	12−10= ?	? − 7=5

e.	*f.*	*g.*	*h.*
9+ ?=13	3+8= ?	?+7=13	?−8=6
13−4= ?	14− ?= 5	14− ?= 4	2×7= ?
?+9=14	4× ?=12	9+ ?=12	12÷6= ?
2+7= ?	11− ?= 5	12÷4= ?	13−7= ?
?−8= 4	4+7= ?	7−6= ?	14÷ ?=2

i. Subtract at sight:

11	13	12	10	12	12	11	14	13	10
2	2	2	3	3	4	4	4	4	5

EXERCISE 7.

a. How many 2's in 6? 9? 12? 11? 13? 14?
b. How many 3's in 7? 9? 11? 12? 13? 14?
c. How many 4's in 7? 10? 12? 11? 14? 13?
d. How many 5's in 9? 8? 10? 13? 12? 14?
e. How many 6's in 12? 10? 13? 8? 14? 11?

Show the following by squares or blocks, as given on pages 29 and 33.

a.	*b.*	*c.*	*d.*
$10+5=$	$9+6=$	$8+7=$	$7+7+1=$
$15-10=$	$15-9=$	$15-8=$	$7\times2+1=$
$15\div10=$	$15\div9=$	$15\div8=$	$15-7-7=$
			$15\div7=$

e.	*f.*	*g.*
$6+6+3=$	$5+5+5=$	$4+4+4+3=$
$6\times2+3=$	$5\times3=$	$4\times3+3=$
$15-6-6=$	$15-5-5-5=$	$15-4-4-4=$
$15\div6=$	$15\div5=$	$15\div4=$

h.	*i.*
$3+3+3+3+3=$	$2+2+2+2+2+2+2+1=$
$3\times5=$	$15-2-2-2-2-2-2-2=$
$15-3-3-3-3-3=$	$2\times7+1=$
$15\div3=$	$15\div2=$

j.	*k.*	*l.*
$\frac{1}{3}$ of $15=$	$15=7\times?+1$	$15\div11=$
$\frac{1}{5}$ of $15=$	$15=13+?$	$15\div12=$
$\frac{1}{2}$ of $15=$	$15=?+4$	$15\div13=$

m.	*n.*
$15=8\times?+?$	— threes are 15
$15=10\times?+?$	— sevens and — are 15
$15=6\times?+?$	— fours and — are 15

a. Three doors and — doors are thirteen doors.

b. Four clocks and — clocks are eleven clocks.

c. Seven hats and — hats are twelve hats.

d. Six cards and — cards are fourteen cards.

e. Eight shoes and — shoes are twelve shoes.

f. Fourteen horses less — horses are seven horses.

g. Eleven cups less — cups are four cups.

h. Twelve knives less — knives are five knives.

i. Fourteen lamps less — lamps are three lamps.

EXERCISE 10.

a.	*b.*	*c.*	*d.*
10 + 4 =	15 − 1 =	4 + 8 =	15 − 10 =
10 + 5 =	15 − 2 =	7 + 6 =	12 − 7 =
11 + 3 =	15 − 3 =	9 + 3 =	6 − 5 =
11 + 4 =	15 − 4 =	10 + 5 =	12 − 8 =
12 + 2 =	15 − 5 =	9 + 4 =	15 − 11 =

e.	*f.*	*g.*	*h.*
12 + 3 =	15 − 14 =	3 + 8 =	9 − 6 =
13 + 1 =	15 − 13 =	2 + 6 =	14 − 8 =
13 + 2 =	15 − 12 =	10 + 4 =	15 − 3 =
4 + 10 =	15 − 11 =	12 + 3 =	14 − 7 =
5 + 10 =	15 − 10 =	2 + 13 =	10 − 8 =

Add:

a.	*b.*	*c.*	*d.*	*e.*	*f.*	*g.*	*h.*	*i.*	*j.*
5	2	3	1	3	4	9	4	2	3
3	7	6	7	2	8	1	2	4	2
1	5	2	4	6	2	3	6	1	3

k.	*l.*	*m.*	*n.*	*o.*	*p.*	*q.*	*r.*	*s.*	*t.*
4	5	2	7	5	1	7	2	7	2
2	3	1	2	3	5	1	3	1	6
7	2	3	1	4	2	4	4	3	4
1	4	4	2	1	1	1	3	3	3

EXERCISE 12.

a. John had three apples, Mary 4 apples, and Eddie 5 apples. How many apples had they all? 3 apples and 4 apples and 5 apples are — apples. They all had — apples.

b. Henry earned 5 cents one day, 6 cents the next day, and 4 cents the next day. How many cents did he earn? He earned 5 cents and 6 cents and 4 cents. Answer: — cents.

c. Ralph paid 15 cents for marbles, and James spent 6 cents less than Ralph. How much did James spend? He spent 15 cents less 6 cents. 15 cents less 6 cents are — cents.

a. A little boy had 14 peaches. He ate 7 of them. He then had — peaches left. $14 - 7 = —$.

b. In a garden were 13 trees; ten of them were apple-trees, the others were plum-trees. $13 - 10 = —$. So there were — plum-trees.

c. If 15 chairs were in a room, and 9 chairs were carried out, there would then be — chairs left. $15 - 9 = —$.

d. In a nest there were 12 eggs. 5 of the eggs were taken out. Then there were — eggs.

EXERCISE 14.

Put in the proper sign in these examples:

a.	*b.*	*c.*
3 ? 3 = 9	2 ? 6 = 8	5 ? 9 = 14
12 ? 3 = 9	4 ? 2 = 8	6 ? 4 = 2
15 ? 6 = 9	5 ? 10 = 15	12 ? 3 = 4
4 ? 6 = 10	2 ? 7 = 14	15 ? 3 = 5
6 ? 2 = 12	3 ? 11 = 14	8 ? 7 = 15

d.	*e.*	*f.*
7 ? 5 = 12	15 ? 9 = 6	7 ? 5 = 2
3 ? 4 = 12	7 ? 4 = 11	9 ? 5 = 14
8 ? 2 = 4	9 ? 5 = 4	15 ? 5 = 3
7 ? 2 = 14	2 ? 10 = 12	15 ? 5 = 10
5 ? 3 = 15	8 ? 2 = 16	14 ? 8 = 6

a.

$15 - ? = 10$
$14 + ? = 15$
$6 \times ? = 12$
$13 - 6 = ?$
$4 \times 3 = ?$

b.

$11 + ? = 15$
$2 \times 6 = ?$
$3 + ? = 14$
$? - 8 = 6$
$? + 7 = 15$

c.

$2 \times 5 = ?$
$11 - 7 = ?$
$15 - ? = 9$
$7 + ? = 14$
$4 \times ? = 12$

d.

$12 - ? = 7$
$? \times 4 = 12$
$2 \times 7 = ?$
$10 - 9 = ?$
$8 + ? = 15$

e.

$6 \times 2 = ?$
$? - 7 = 6$
$3 \times ? = 12$
$10 - ? = 1$
$15 - 7 = ?$

f.

$6 + ? = 15$
$2 \times 4 = ?$
$3 \times ? = 9$
$11 - 5 = ?$
$12 - 7 = ?$

g.

$15 - 5 =$
$13 - 5 =$
$14 - 5 =$
$12 - 5 =$

h.

$14 - 4 =$
$11 - 4 =$
$13 - 4 =$
$12 - 4 =$

i.

$10 - 6 =$
$14 - 6 =$
$12 - 6 =$
$15 - 6 =$

j.

$13 - 3 =$
$11 - 3 =$
$14 - 3 =$
$12 - 3 =$

Add at sight:

k.

9	10	6	7	9	3	7	8	6	5
4	5	8	5	6	9	8	6	7	9

l.

4	12	11	9	8	3	6	7	8	2
8	3	4	4	7	12	8	4	3	8

a. Seven days make one week. In 2 weeks there are — days.

b. In one week there were 4 pleasant days and there were — stormy days. $(4 + ? = 7.)$

c. If school keeps 5 days every week, how many days are left? $(5 + ? = 7.)$

d. In two weeks there were 5 stormy days. How many pleasant days were there?

e. If a boy picked a dozen boxes of berries, and sold 8 boxes, how many would he have?

f. Put $\frac{1}{2}$ dozen sticks in one pile, $\frac{1}{3}$ dozen in another, $\frac{1}{4}$ dozen in another. How many sticks in all?

g. Four weeks make one month. In $\frac{1}{2}$ month there are — weeks.

h. In three months there are — weeks.

i. In two months and three weeks there are — weeks.

j. A little girl was sick 3 months and a half. How many weeks was she sick?

k. School has kept 3 months and 3 weeks. How many weeks has it kept?

l. Add:

3	6	4	3	5	4	2	5	7	5
4	2	5	9	2	3	6	3	2	6
5	3	2	1	6	4	1	4	1	3



GALLON.



QUART.



PINT.



GILL.

In a gallon there are 4 quarts. qt. = quarts.

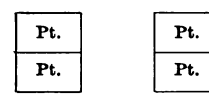
In a quart there are 2 pints. pt. = pints.

In a pint there are 4 gills. gi. = gills.

In 1 quart there are 2 pints. In 2 quarts there are — pints.



1 QUART.



2 QUARTS.

In 3 quarts there are — pints. (Show by drawing.)

Show by drawing:

How many quarts in 2 gallons.

How many quarts in 1 gallon and 2 quarts.

How many quarts in 2 gallons and 3 quarts.

How many pints in 2 quarts and 1 pint.

How many gills in 2 pints.

How many gills in 3 pints and 2 gills.

How many pints in 1 gallon and 1 quart.

a. If one gallon, or four quarts, of milk costs 12 cents, a quart will cost — cents. $\frac{1}{4}$ of 12 = ?

b. In two and one-half gallons of milk there are — quarts.

c. A boy bought 8 quarts of molasses. How many gallons did he buy?

d. In one quart there are two pints. In 5 quarts there are 5 times 2 pints, or — pints.

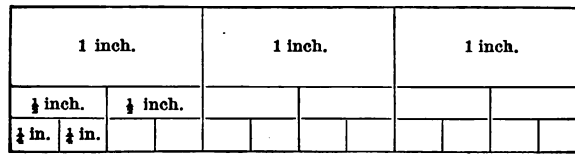
e. In one-half a quart there is one-half of two pints. One-half of two pints is — pint.

f. A girl picked 6 quarts of cherries. How many pints did she pick?

Add:

g.	*h.*	*i.*	*j.*
1 + 4 =	5 + 6 =	3 + 5 =	2 + 3 =
3 + 4 =	2 + 6 =	4 + 5 =	8 + 3 =
9 + 4 =	7 + 6 =	2 + 5 =	3 + 3 =
2 + 4 =	3 + 6 =	9 + 5 =	5 + 3 =
7 + 4 =	6 + 6 =	5 + 5 =	9 + 3 =

k.	*l.*	*m.*
8 + ? = 14	13 − 8 = ?	9 + 5 = ?
14 − 9 = ?	10 − 7 = ?	14 ÷ 2 = ?
6 + ? = 14	? × 2 = 12	12 ÷ ? = 4
14 − 7 = ?	? × 4 = 12	10 − 8 = ?
6 × 2 = ?	13 − ? = 7	14 − 11 = ?



12 inches make 1 foot.
in. means inch or inches.
ft. means foot or feet.

a. Cut a strip of paper measuring 12 inches long and 1 inch wide. Mark the inches.

b. Draw a line, as near as you can, 2 inches long, and then measure the line.

c. Draw a line, as near as you can, 3 inches long, and then measure the line.

d. Find, by measuring, how many inches long and wide your desk is.

e. "Guess" how long and wide this page is, and then measure to see how near you came to the correct measure.

f. $\frac{1}{4}$ of a foot is — inches.

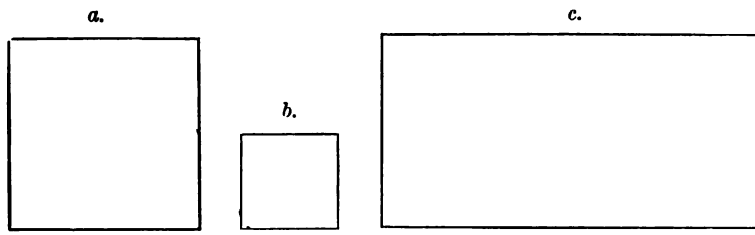
g. In $1\frac{1}{4}$ feet there are — inches.

h. How many half inches are there in 1 in.? in 2 in.? in 3 in.?

i. Draw a line 1 yard, or 3 ft., long.

j. 2 yards are how many feet? 3 yards? 4 yards? yd. means yard or yards.

a. How long and wide is each of these rectangles?



b. Which of these rectangles are squares?

c. Cut paper of the same size as *a*, *b*, and *c*.

d. Fold *a* to the size of *b*. Fold *c* to the size of *a*. Fold *c* to the size of *b*.

e. *a* is how many times as large as *b*?

f. *c* is how many times as large as *a*?

g. *c* is how many times as large as *b*?

h. How long and wide is the page of this book?

i. How many inches around *a*? around *b*? around *c*?

j. Draw a rectangle 4 in. long and 2 in. wide.

k. In one-half of a foot there is one-half of 12 inches, or — inches.

l. In one-third of a foot there is one-third of 12 inches, or — inches.

m. In one-fourth of a foot there is one-fourth of 12 inches, or — inches.

SECTION IV.

NUMBERS FROM 1 TO 20.

EXERCISE 1.



a. There are — gills in a pint.

b. There are — pints in a quart.

c. There are — quarts in a gallon.

d. In half a pint there are — gills.

e. There are — pint measures full of water in a quart.

Give full answers to the following questions:

f. How many pints in two quarts?

g. How many half-pint cupfuls of water in a pint? How many in a quart?

h. At 3 ct. a pt., what cost 1 qt. of milk?

i. At 8 ct. a qt., what cost 1 pt. of milk?

j. How many quart measures full of water in a gallon?

k. What will 1 qt. of oil cost at 12 ct. a gallon?

Show by squares the following:

a.

$10+6=$
$16-6-6=$
$16\div 6=$

b.

$9+7=$
$16-7-7=$
$16\div 7=$

c.

$8+8=$
$8\times 2=$
$16-8-8=$
$16\div 8=$

d.

$5+5+5+1=$
$5\times 3+1=$
$16-5-5-5=$
$16\div 5=$

e.

$4+4+4+4=$
$4\times 4=$
$16-4-4-4-4=$
$16\div 4=$

f.

$3+3+3+3+3+1=$
$16-3-3-3-3-3=$
$16\div 3=$

g.

$2+2+2+2+2+2+2+2=$
$2\times 8=$
$16-2-2-2-2-2-2-2-2=$
$16\div 2=$

h.

$\frac{1}{2}$ of $16=$
$\frac{1}{4}$ of $16=$
$\frac{1}{8}$ of $16=$

i.

$16\div 3=$
$16\div 9=$
$16\div 10=$

j.

$16-14=$
$16-13=$
$16-12=$

k.

$16\div 12=$
$16\div 14=$
$16\div 15=$

a.	*b.*	*c.*
2 twos = ?	16 − 2 = ?	14 + ? = 16
4 twos = ?	14 − 2 = ?	12 + ? = 16
6 twos = ?	12 − 2 = ?	10 + ? = 16
5 twos = ?	10 − 2 = ?	8 + ? = 16
7 twos = ?	8 − 2 = ?	6 + ? = 16
3 twos = ?	6 − 2 = ?	4 + ? = 16
8 twos = ?	4 − 2 = ?	2 + ? = 16
1 two = ?	2 − 2 = ?	0 + ? = 16

d.	*e.*	*f.*
16 = 4 + ?	16 − 8 = ?	4 × 4 = ?
16 = 3 + ?	16 − 4 = ?	3 × 4 = ?
16 = 2 + ?	16 − 2 = ?	2 × 4 = ?
16 = 5 + ?	16 − 5 = ?	3 × 5 = ?
16 = 6 + ?	16 − 3 = ?	2 × 5 = ?
16 = 8 + ?	16 − 7 = ?	2 × 8 = ?
16 = 9 + ?	16 − 10 = ?	8 × 2 = ?
16 = 7 + ?	16 − 9 = ?	2 × 7 = ?
16 = 10 + ?	16 − 8 = ?	3 × 3 = ?

g.	*h.*
4 + 4 + 4 + ? = 16	16 − 3 − 3 − 3 − 3 − 3 − ? = 0
3 + 3 + 3 + 3 + 3 + ? = 16	16 − 5 − 5 − 5 − ? = 0
6 + 6 + ? = 16	16 − 6 − 6 − ? = 0
5 + 5 + 5 + ? = 16	16 − 4 − 4 − 4 − ? = 0
7 + 7 + ? = 16	16 − 7 − 7 − ? = 0

Show by drawing:

a. In 1 gallon there are 4 quarts; in 2 gallons there are 2 times 4 quarts. 2 times 4 quarts are — quarts.

b. In 3 gallons there are — times 4 quarts, or — quarts.

c. In 4 gallons there are — times 4 quarts, or — quarts.

d. At 4 cents a quart, 1 gallon of milk will cost — cents.

e. What will 2 quarts of vinegar cost at 8 cents a quart?

f. A lady bought 2 gallons of molasses. How many quarts did she buy?

g. In one can there were 8 quarts of milk, and in another can 4 quarts. How many gallons of milk were there?

h. Two pails of water each held 2 gallons. How many quarts in both pails?

i. A can that holds 3 gallons and 1 quart, holds — quarts.

j. How many gallons and quarts in 10 quarts?

k. How many quarts in 2 gallons and 2 quarts?

l. How many gallons in 12 quarts?

m. What will 2 gallons and a quart of milk cost at 6 cents a quart?

a.	*b.*	*c.*	*d.*
$13+2=$	$15-8=$	$7\times2=$	$10\div2=$
$11+4=$	$16-9=$	$6\times2=$	$16\div4=$
$13+3=$	$14-5=$	$5\times3=$	$12\div3=$
$11+5=$	$13-3=$	$4\times4=$	$8\div2=$
$12+3=$	$15-6=$	$2\times6=$	$9\div3=$
$13+3=$	$16-7=$	$8\times2=$	$12\div6=$
$9+7=$	$12-8=$	$2\times7=$	$14\div2=$
$8+6=$	$16-4=$	$3\times5=$	$16\div2=$
$6+9=$	$11-7=$	$2\times8=$	$15\div3=$

e.	*f.*
$16-4-2-3-2=?$	$16-2-8-6=?$
$16-3-4-5-1=?$	$16-5-4-3=?$
$16-2-7-4-2=?$	$16-6-5-1=?$

g.

Eight nuts and seven nuts are — nuts.

Six oranges and nine oranges are — oranges.

Four potatoes and twelve potatoes are — potatoes.

Six squares and ten squares are — squares.

Five doors and eleven doors are — doors.

Seven windows and nine windows are — windows.

Eight birds and eight birds are — birds.

Eight quarts and five quarts are — quarts.

a. A little girl bought 12 pears and had 4 more given her. How many had she in all?

b. What number of cents will there be in two 2-cent pieces, a dime, and a penny?

c. How many legs have four chairs?

d. How many sides have four triangles?

e. If 2 gallons of milk were spilled out of a ten-quart pailful, how many quarts would be left?

f. A room is 5 yards and 1 foot long. How many feet long is it?

g. A table is 9 feet long. How many yards long is it?

h. How many legs have two flies and a bird?

i. A house has 3 windows behind and 4 times as many in front. How many windows has it in both front and back?

j. How many things must you put with a dozen to make 16?

Add: *k.*

2	3	5	2						
3	5	2	3	5	1	5	9	8	6
2	2	4	6	4	7	6	2	1	2
4	4	3	1	3	2	3	3	3	5
2	1	2	4	3	6	2	1	4	3

Put in the proper signs with the following numbers:

a.	*b.*	*c.*
3 - 8 - 11	4 - 9 - 13	5 - 8 - 13
2 - 4 - 6	5 - 2 - 10	13 - 8 - 5
5 - 3 - 15	6 - 8 - 14	6 - 2 - 12
9 - 3 - 3	15 - 3 - 5	4 - 3 - 12
7 - 2 - 14	12 - 8 - 4	7 - 6 - 13
9 - 3 - 6	7 - 2 - 5	8 - 4 - 12
8 - 4 - 2	8 - 6 - 2	9 - 5 - 4
9 - 7 - 16	12 - 4 - 3	6 - 9 - 15
5 - 9 - 14	9 - 4 - 13	3 - 5 - 15
16 - 8 - 8	4 - 4 - 16	16 - 4 - 12

d.	*e.*	*f.*
$\frac{1}{2}$ of 12 =	$\frac{1}{2}$ of 14 =	$\frac{1}{2}$ of 16 =
$\frac{1}{3}$ of 9 =	$\frac{1}{3}$ of 12 =	$\frac{1}{3}$ of 15 =
$\frac{1}{4}$ of 8 =	$\frac{1}{4}$ of 12 =	$\frac{1}{4}$ of 16 =

Subtract:

g.

10	11	10	9	12	11	10	12	13	11
3	4	5	6	3	2	4	5	4	5

h.

16	14	15	14	13	15	16	11	14	16
8	5	8	6	7	9	8	7	8	9

Show by squares or marks the following:

a.

$10+7=$
$17-7-7=$
$17\div 7=$

b.

$9+8=$
$17-8-8=$
$17\div 8=$

c.

$6+6+5=$
$17-6-6=$
$17\div 6=$

d.

$5+5+5+2=$
$5\times 3+2=$
$17-5-5-5=$
$17\div 5=$

e.

$4+4+4+4+1=$
$4\times 4+1=$
$17-4-4-4-4=$
$17\div 4=$

f.

$3+3+3+3+3+2=$
$3\times 5+2=$
$17-3-3-3-3-3=$
$17\div 3=$

g.

$2+2+2+2+2+2+2+2+1=$
$2\times 8+1=$
$17-2-2-2-2-2-2-2-2=$
$17\div 2=$

h.

$17=7\times ?+3$
$17=3\times ?+2$
$17=4\times ?+1$
$17=6\times ?+5$

i.

$17=2\times ?+1$
$17=5\times ?+2$
$17=8\times ?+1$
$17=9\times ?+8$

j.

$17\div 2=?$
$17\div 3=?$
$17\div 4=?$
$17\div 5=?$

k.

$17-\ 6=$
$17-\ 7=$
$17-\ 8=$
$17-\ 9=$

l.

$4\times 4+?=17$
$3\times 5+?=17$
$9\times 1+?=17$
$6\times 2+?=17$

m.

$8+?=17$
$6+?=17$
$9+?=17$
$7+?=17$

Add at sight:

a.	9	7	11	12	13	14	13	14	15	11
	2	3	2	3	2	2	3	3	2	3
b.	8	6	9	11	13	12	11	13	12	14
	4	4	4	4	4	4	3	3	3	3
c.	6	8	7	9	10	12	11	9	11	8
	5	5	5	5	6	5	5	6	6	6
d.	8	6	9	10	4	3	5	6	9	7
	7	7	7	7	7	7	8	8	8	8

Subtract at sight:

e.	9	8	10	11	16	12	13	15	14	17
	4	4	4	4	4	4	4	4	4	4
f.	8	10	9	11	13	12	15	17	16	14
	5	5	5	5	5	5	5	5	5	5
g.	9	11	10	8	15	12	14	13	16	17
	6	6	6	6	6	6	6	6	6	6
h.	8	10	9	12	11	13	12	15	17	16
	7	7	7	7	7	7	7	7	7	7
i.	10	8	9	11	14	12	13	15	17	16
	8	8	8	8	8	8	8	8	8	8

a. How many cents shall I need to make 17 cents, if I have a dime and a five-cent piece?

b. 17 is how much more than 5? 3? 7? 6? 8? 10? 12? 14?

c. 17 is how many times 8? 6? 5? 7? 4? 2? 3? 9?

d. How many wheels have 4 wagons?

e. How many school-days in 3 weeks?

f. How many oranges shall I put with a dozen to make 17?

g. Three little children each found 5 nuts. How many had they all?

h. How many legs have 2 boys and 3 dogs?

i. A girl had one dozen eggs, and she sold $\frac{1}{2}$ of them. How many did she sell?

j. 4 persons are riding horseback, and twice as many are riding in a wagon. How many in all?

k. There are 8 eggs in one basket, and $\frac{1}{2}$ as many in another. How many in both?

l. 17 quarts are how many quarts more than 4 gallons?

m. 17 pints are how many quarts?

n. 17 gills are how many pints and gills? how many quarts and gills?

o. In 2 gallons and 1 pint how many pints?

a. Four gills make one pint. In $\frac{1}{2}$ pint there are — gills.

b. In 1 quart or 2 pints there are — gills.

c. In $1\frac{1}{2}$ pints there are — gills.

d. In $3\frac{1}{2}$ pints there are — gills.

e. At 4 cents for every gill of cream, a pint will cost — cents.

f. There are — quarts in 1 gallon. In $2\frac{1}{2}$ gallons there are — quarts.

g. In $3\frac{1}{2}$ gallons there are — quarts.

h. There are — gallons in 12 quarts.

i. In 1 gallon there are — pints.

j. In $1\frac{1}{2}$ gallons there are how many pints?

k. At one cent a gill, a quart will cost — cents, and a quart and a pint will cost — cents.

l. A little boy spilled 2 quarts of milk. He still had a gallon left. He must have had — quarts at first.

m. Seven days make one week. There are — weeks in 14 days.

n. There are — weeks and — days in 17 days.

o. In one week there were four pleasant days. The other — days were not pleasant.

p. A man worked every week-day for 2 weeks at one dollar a day. How many dollars did he earn?

Show by squares or marks the following:

a.	*b.*	*c.*	*d.*
9+9=	8+8+2=	7+7+4=	6+6+6=
9×2=	8×2+2=	7×2+4=	6×3=
18−9−9=	18−8−8=	18−7−7=	18−6−6−6=
18÷9=	18÷8=	18÷7=	18÷6=

e.	*f.*
5+5+5+3=	4+4+4+4+2=
5×3+3=	4×4+2=
15−5−5−5=	18−4−4−4−4=
15÷5=	18÷4=

g.

3 + 3 + 3 + 3 + 3 + 3 =
3 × 6 =
18 − 3 − 3 − 3 − 3 − 3 − 3 =
18 ÷ 3 =

h.

2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 =
2 × 9 =
18 − 2 − 2 − 2 − 2 − 2 − 2 − 2 − 2 − 2 =
18 ÷ 2 =

i.

Compare 18 with 17; with 16; with 15; with 14; with 13; with 12; with 11; with 10; with 9; with 8; with 7; with 6; with 5; with 4.

a.	*b.*	*c.*
4 + = ? 18	10 + ? = 18	18 − 6 = ?
6 + ? = 18	12 + ? = 18	18 − 12 = ?
9 + ? = 18	14 + ? = 18	18 − 3 = ?
7 + ? = 18	16 + ? = 18	18 − 16 = ?
8 + ? = 18	11 + ? = 18	18 − 10 = ?
2 + ? = 18	13 + ? = 18	18 − 8 = ?
5 + ? = 18	15 + ? = 18	18 − 7 = ?
3 + ? = 18	17 + ? = 18	18 − 9 = ?

Add:

d.

4	3	2	4	5	3	7	3	4	3
5	8	9	3	2	9	2	4	2	9
6	7	1	7	6	4	8	6	8	5

e.

5	7	3	4	3	6	8	2	7	4
3	4	5	8	8	5	7	9	5	4
6	6	9	6	4	5	3	6	6	9

How many

f.	*g.*	*h.*
3's in 18?	2's in 18?	9's in 18?
8's in 18?	4's in 18?	5's in 18?
6's in 18?	7's in 18?	10's in 18?
10's in 18?	11's in 18?	12's in 18?

a.	*b.*	*c.*
4 + 4 = ?	3 + 6 = ?	7 + 8 = ?
3 + 4 = ?	7 + 6 = ?	6 + 8 = ?
7 + 4 = ?	9 + 6 = ?	4 + 8 = ?
9 + 4 = ?	5 + 6 = ?	10 + 8 = ?
12 + 4 = ?	10 + 6 = ?	8 + 8 = ?
5 + 5 = ?	6 + 7 = ?	2 + 9 = ?
9 + 5 = ?	2 + 7 = ?	9 + 9 = ?
2 + 5 = ?	5 + 7 = ?	6 + 9 = ?
3 + 5 = ?	8 + 7 = ?	8 + 9 = ?
12 + 5 = ?	10 + 7 = ?	4 + 9 = ?

d.	*e.*	*f.*
18 − 4 = ?	12 − 6 = ?	12 − 8 = ?
17 − 4 = ?	18 − 6 = ?	13 − 8 = ?
16 − 4 = ?	14 − 6 = ?	15 − 8 = ?
15 − 4 = ?	17 − 6 = ?	11 − 8 = ?
14 − 4 = ?	13 − 6 = ?	18 − 8 = ?
10 − 5 = ?	13 − 7 = ?	15 − 9 = ?
16 − 5 = ?	12 − 7 = ?	11 − 9 = ?
18 − 5 = ?	11 − 7 = ?	16 − 9 = ?
17 − 5 = ?	10 − 7 = ?	10 − 9 = ?
14 − 5 = ?	18 − 7 = ?	18 − 9 = ?

g. Count forward and backward by 2's to 18.
h. Count forward and backward by 3's to 18.
i. Count forward and backward by 6's to 18.

5, 8, 6, 3, 9, 2, 4, 1, 7, 10.

a. Add 2 to each number.
b. Add 3 to each number.
c. Add 4 to each number.
d. Add 5 to each number.
e. Add 6 to each number.
f. Add 7.
g. Add 8.
h. Add 9.
i. Add 10.

8, 2, 6, 4, 9, 3, 7, 5, 11, 10.

j. Subtract 2 from each number.
k. Subtract 3 from each number if possible.
l. Subtract 4 from each number if possible.
m. Subtract 5 from each number if possible.
n. Subtract 6 from each number if possible

Add.

o.

5	4	3	7	3	5	3	8	4	3
6	7	9	5	2	6	4	2	5	6
3	2	4	6	8	6	9	6	8	7

Subtract:

p.

15	17	16	14	12	13	18	15	17	18
−4	−8	−5	−8	−7	−4	−10	−6	−4	−6

q.

12	15	14	18	16	17	12	13	14	18
−9	−11	−9	−8	−4	−9	−8	−4	−6	−9

r. $4+8-3+5-6+5-7+9-8=?$

a. A little boy bought 6 pears at 3 cents apiece. How much did they cost?

b. Henry put 18 nuts on a fence. A squirrel carried off eight of them. How many nuts were left?

c. How many days in 2 weeks and 3 days?

d. A man sold a chair for 18 dollars, which was four dollars more than it cost. How much did it cost?

e. A lady divided 18 cookies equally among 6 little children. How many cookies did each one receive?

f. How many inches in a foot and a half?

g. A man made a ruler 18 inches long. A half foot was broken off. How long was the ruler then?

h. How many eggs in a dozen and a half?

i. What would 9 sleds cost at 2 dollars each?

j. If 1 pint of milk costs 2 cents, what will 1 gallon of milk cost?

k. How many cents in a dime and a five-cent piece and three pennies?

l. A little girl picked 18 chestnuts, and gave $\frac{1}{2}$ of them away. How many had she left?

m. How many triangles can you make with 18 splints?

Show by squares or marks the following:

a.	*b.*	*c.*
$10+9=$	$9+9+1=$	$8+8+3=$
$19-10=$	$9\times2+1=$	$8\times2+3=$
$19\div10=$	$19-9-9=$	$19-8-8=$
	$19\div9=$	$19\div8=$

d.	*e.*	*f.*
$7+7+5=$	$6+6+6+1=$	$5+5+5+4=$
$7\times2+5=$	$6\times3+1=$	$5\times3+4=$
$19-7-7=$	$19-6-6-6=$	$19-5-5-5=$
$19\div7=$	$19\div6=$	$19\div5=$

g.	*h.*
$4+4+4+4+3=$	$3+3+3+3+3+3+1=$
$4\times4+3=$	$3\times6+1=$
$19-4-4-4-4=$	$19-3-3-3-3-3-3=$
$19\div4=$	$19\div3=$

i. 19 is — more than 10.

j. 10 is — less than 19.

k. 10 is contained in 19 — time and — over.

l. In the same way compare 19 with 11, 12, 13, 14, 15, 16, 17, 18.

m. There are — 9's and — remainder in 19.

n. How many 8's in 19? 7's? 6's? 5's? 4's? 3's? 2's?

a.

2 eights = ?
3 sixes = ?
4 fours = ?
3 twos = ?
2 nines = ?
4 threes = ?
3 fives = ?
9 twos = ?
2 sevens = ?
6 threes = ?

b.

In 18 there are ? threes.
In 16 there are ? fours.
In 12 there are ? twos.
In 15 there are ? fives.
In 16 there are ? eights
In 18 there are ? nines.
In 14 there are ? twos.
In 12 there are ? threes.
In 14 there are ? sevens.
In 15 there are ? threes.

c.	*d.*	*e.*
$18+?=19$	$19-?=10$	$2+3+4+?=19$
$16+?=19$	$19-?=12$	$6+2+3+?=19$
$12+?=19$	$19-?=7$	$4+7+6+?=19$
$17+?=19$	$19-?=9$	$5+2+7+?=19$
$14+?=19$	$19-?=6$	$5+3+2+?=19$

f.	*g.*	*h.*
$15+?=19$	$19-?=15$	$6+3+7+?=19$
$10+?=19$	$19-?=13$	$5+4+2+?=19$
$8+?=19$	$19-?=16$	$2+6+8+?=19$
$9+?=19$	$19-?=18$	$7+7+3+?=19$
$13+?=19$	$19-?=11$	$4+4+2+?=19$

i. $5+7-8+7+8-6-5+9-6=?$

a. 9 twos and ? = 19.
b. 6 threes and ? = 19.
c. 4 fours and ? = 19.
d. 3 fives and ? = 19.
e. 3 sixes and ? = 19.
f. 2 sevens and ? = 19.
g. 2 eights and ? = 19.
h. 2 nines and ? = 19.
i. 1 ten and ? = 19.

j. 19 − 9 =
k. 19 − 8 =
l. 19 − 7 =
m. 19 − 6 =
n. 19 − 5 =
o. 19 − 4 =
p. 19 − 3 =
q. 19 − 2 =
r. 19 − 1 =

Fill in the missing number:

s.	*t.*	*u.*
3 + ? = 12	9 × ? = 18	6 ÷ 3 = ?
7 × 2 = ?	18 − 6 = ?	15 ÷ ? = 5
8 + 6 = ?	15 − ? = 9	12 ÷ 3 = ?
? × 4 = 16	12 ÷ 3 = ?	9 + 8 = ?
19 − 7 = ?	16 ÷ 2 = ?	? × 6 = 18

v.	*w.*	*x.*
5 × ? = 15	14 ÷ ? = 7	? × 4 = 8
12 − 8 = ?	18 − 7 = ?	3 + 11 = ?
4 + 11 = ?	? × 3 = 18	19 − ? = 10
7 × ? = 14	4 + ? = 16	19 − 6 = ?
15 − 6 = ?	12 − 11 = ?	4 + 15 = ?

y. 19 ÷ 2 = — times and — remainder.

z. Divide 19 by 3; by 4; by 7; by 8; by 9; by 12; by 11; by 10.

Show by squares or lines the following:

a.	*b.*	*c.*
$10+10=$	$9+9+2=$	$8+8+4=$
2 tens $=$	$9\times 2+2=$	$8\times 2+4=$
$20-10=$	$20-9-9=$	$20-8-8=$
$20\div 10=$	$20\div 9=$	$20\div 8=$

d.	*e.*	*f.*
$7+7+6=$	$6+6+6+2=$	$5+5+5+5=$
$7\times 2+6=$	$6\times 3+2=$	$5\times 4=$
$20-7-7=$	$20-6-6-6=$	$20-5-5-5=$
$20\div 7=$	$20\div 6=$	$20\div 5=$

g.	*h.*
$4+4+4+4+4=$	$3+3+3+3+3+3+2=$
$4\times 5=$	$3\times 6+2=$
$20-4-4-4-4-4=$	$20-3-3-3-3-3-3=$
$20\div 4=$	$20\div 3=$

i.

$2+2+2+2+2+2+2+2+2+2=$

$2\times 10=$

$20-2-2-2-2-2-2-2-2-2-2=$

$20\div 2=$

j.	*k.*
$11\times 1+?=20$	$16\times 1+?=20$
$13\times 1+?=20$	$18\times 1+?=20$

a. Compare 20 with each number below 20, thus:

20 is — more than 19.
20 is — more than 18, etc.

b. 19 is contained in 20 — time and — over.
c. 17 is contained in 20 — time and — over.
d. 15 is contained in 20 — time and — over.
e. 12 is contained in 20 — time and — over.
f. 10 is contained in 20 — times and — over.
g. 8 is contained in 20 — times and — over.
h. 6 is contained in 20 — times and — over.
i. 4 is contained in 20 — times and — over.
j. 7 is contained in 20 — times and — over.
k. 5 is contained in 20 — times and — over.
l. 3 is contained in 20 — times and — over.
m. 2 is contained in 20 — times and — over.

n. Count by twos up to 20.
o. — twos are 20.
p. Count by threes up to 18.
q. — threes and — are 20.
r. Count by fours up to 20.
s. — fours are 20.
t. Count by fives up to 20.
u. — fives are 20.
v. Count by sixes up to 18.
w. — sixes and — are 20.

Put in the number to make 20 wherever the "star" is:

a.	*b.*	*c.*	*d.*	*e.*	*f.*	*g.*	*h*	*i.*	*j.*
6	5	3	7	2	6	2	4	1	5
4	3	9	3	7	1	8	3	6	0
2	4	2	4	1	3	3	4	4	4
3	2	4	2	7	4	1	2	0	2
*	*	*	*	*	*	*	*	*	*
20	20	20	20	20	20	20	20	20	20

k. 20 is ? more than 10.
l. 20 is ? more than 12.
m. 20 is ? more than 16.
n. 20 is ? more than 9.
o. 20 is ? more than 15.
p. 20 is ? more than 13.
q. 20 is ? more than 11.
r. 20 is ? more than 14.

s. Divide 8, 4, 6, 12, 20, 16, 18 by 4.
t. Divide 9, 3, 12, 15, 7, 18, 20 by 3.

u.	*v.*	*w.*
$\frac{1}{2}$ of 10 =	$\frac{1}{2}$ of 14 =	$\frac{1}{2}$ of 18 =
$\frac{1}{2}$ of 12 =	$\frac{1}{2}$ of 16 =	$\frac{1}{2}$ of 20 =
$\frac{1}{3}$ of 6 =	$\frac{1}{3}$ of 9 =	$\frac{1}{3}$ of 12 =
$\frac{1}{3}$ of 3 =	$\frac{1}{3}$ of 15 =	$\frac{1}{3}$ of 18 =

Copy carefully:

One	1	I	Eleven	11	XI
Two	2	II	Twelve	12	XII
Three	3	III	Thirteen	13	XIII
Four	4	IV	Fourteen	14	XIV
Five	5	V	Fifteen	15	XV
Six	6	VI	Sixteen	16	XVI
Seven	7	VII	Seventeen	17	XVII
Eight	8	VIII	Eighteen	18	XVIII
Nine	9	IX	Nineteen	19	XIX
Ten	10	X	Twenty	20	XX

Read the following, and write in figures:

II, III, V, VI, VII, VIII, X, XI, XIII, XV, XVI, XVII, XVIII.

V, IV, VI, X, IX, XI, XV, XIV, XVI, XX, XIX.

VIII, VI, IX, XVI, XIX, XI, XIII, IV, XVII, XIV, XII, XVIII, VIII, XX.

Write in Roman notation:

1, 3, 5, 6, 8, 10, 12, 13, 15, 16, 11, 2, 17, 18, 20, 7.

5, 4, 6, 8, 9, 3, 7, 10, 2, 15, 14, 16, 11, 18, 20, 19, 12, 17, 13.

9, 4, 14, 19, 13, 16, 11, 8, 13, 17, 12, 18.

Which is the larger, and how much?

a. 4×5 or 3×6?
b. 2×8 or 3×5?
c. 7×2 or 4×4?
d. 8×2 or 3×4?
e. 5×3 or 2×10?
f. 2×9 or 6×3?

g. From 20 take 4, five times. How many are left?

h. From 18 take 3, five times. How many are left?

i. From 20 take 9, two times. How many are left?

j. From 18 take 4, three times. How many are left?

k. Compare $\frac{1}{2}$ of 20 with $\frac{1}{3}$ of 18.
l. Compare $\frac{1}{4}$ of 16 with $\frac{1}{2}$ of 12.
m. Compare $\frac{1}{3}$ of 15 with $\frac{1}{2}$ of 20.
n. Compare $\frac{1}{2}$ of 18 with $\frac{1}{3}$ of 12.

o. Harry had 18 marbles, and Willie had $\frac{1}{3}$ as many. Harry had — more marbles than Willie.

p. If James finds in a nest 2 eggs every day, he will have in a week how many eggs more than a dozen?

a.

1 gallon = — quarts.
1 quart = — pints.
1 pint = — gills.

b.

1 foot = — inches.
1 month = — weeks.
1 week = — days.

c.

2 gallons = — quarts.
$2\frac{1}{2}$ quarts = — pints.
$2\frac{1}{2}$ pints = — gills.
16 quarts = — gallons.
10 quarts = — gallons.

d.

8 gills = — pints.
12 gills = — pints.
16 gills = — quarts.
10 gills = — pints.
10 gills = — quarts.

e. Twenty cents are the same as — five-cent pieces.

f. Twenty cents are the same as — two-cent pieces.

g. Eighteen cents equal — nickels and — pennies.

h. Sixteen cents equal — dime and —.

i. A dime and two nickels make — cents.

j. A dime, a nickel, and two pennies make — cents.

k. A dozen and a half eggs are — eggs.

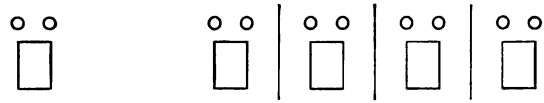
l. A dozen and one-fourth eggs are — eggs.

m. I can buy — two-cent postage stamps for twenty cents.

a. A pansy has 5 petals. How many petals have three pansies?

b. I buy 6 two-cent postage stamps and 5 sheets of paper at one cent a sheet. How much must I pay for all?

c. How many two-cent postage stamps can I buy for 8 cents?



d. How many two-cent postage stamps can I buy for 12 cents? for 18 cents?

e. If I can get 3 pencils for 2 cents, I can get — pencils for 4 cents.



f. If 2 pencils cost 3 cents, what will 6 pencils cost? (Make marks for pencils and circles for cents.)

g. How many lamps at 2 dollars each can I buy for 18 dollars? (Illustrate.)

h. I pay a cent for 3 little flags. How many flags can I get for 6 cents? (Illustrate.)

i. If half a dozen apples cost 5 cents, what must I pay for 18 apples? (Illustrate.)

a. How many times does the sun rise and set in one week?

b. Little Elsie is 6 years old, and her sister is 3 times as old. What is the sister's age?

c. If it takes 6 yards of cloth for a dress, how many dresses can you make from 18 yards?

d. John's mother gave him a paint-box, with 3 rows of paints in it, 6 in a row. How many paints did he have?

e. If you drink 1 pint of milk every day for 2 weeks, how many pints will you drink? How many quarts?

f. A man bought 2 gallons of molasses, and the next day 2 quarts. How many quarts did he have then?

g. It takes 8 shoes for an ox. How many will it take for 2 oxen?

h. A little girl wrote 20 words on her slate. All but 6 were right. How many were right?

i. Mary picked 20 roses and put them equally in 4 bunches. How many in each bunch?

j. Willie bought 10 marbles at 2 cents apiece. He paid for them with 2 dimes. How much had he left?

k. What will two quarts and a pint of milk cost at 6 cents a quart?

a. Henry made 4 soldier-caps and Lizzie 8. How many together?

b. 10 little birds were sitting on the fence. How many little feet were to be seen?

c. If you have a dozen buttons and 3 more on your sack, how many will you have?

d. In a big room are 4 windows, and 4 panes in every window. How many panes in all?

e. 3 pretty doves, 4 white rabbits, 6 hens, and 2 kittens are out in the yard together. How many animals?

f. In a stable were 12 horses. All were driven in spans. How many spans were there?

g. 12 little rubbers stood in a row. To how many children did they belong?

h. How many pairs of boots are 18 boots?

i. How many feet have 2 cats and a kitten?

j. 20 peaches were on the table, and they were divided equally among 5 people. How many peaches could each one have?

k. How many legs have 3 house-flies?

l. How many wings have three spiders and 3 house-flies.

m. A wasp has a pair of large wings and a pair of small wings. How many wings have 3 wasps? How many large wings have 9 wasps?

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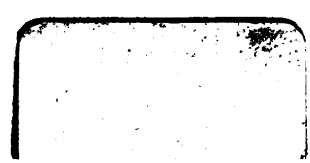
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